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*Hollowing-out, trimming-down or scaling-up?
An analysis of head offices in Canada, 1999-2002*

by John R. Baldwin, Desmond Beckstead and Mark Brown

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An analysis of head offices in Canada, 1999-2002

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Abstract

Recently, considerable public attention has been paid to the possibility that head office employment has been declining as a result of the migration of head offices to other countries, what is sometimes referred to as hollowing-out. This paper asks whether we have observed evidence of this process using new data from Statistics Canada's Business Register, over the past four years (1999-2002). This paper provides a perspective on the changing significance of the head offices in Canada by measuring counts of head offices and their employment. Overall, the paper finds that there are relatively few sectors or enterprises with patterns of decline in their head office function.

Key words: head offices, hollowing-out, agglomeration economies, information and communication technologies

Executive Summary

The possibility that Corporate Canada is being hollowed-out has received considerable public attention of late. Analysts have become concerned that Canada is moving in a number of areas to the hollowed-out corporation that no longer will demand the services of financial markets or of key business services. Since the financial and business services industries are amongst the fastest growing and highest paying sectors, hollowing-out is seen to decrease Canada's growth prospects.

Hollowing-out is perceived to be associated with the decline in the management function. In particular, it is related to the movement of head office employment, and especially senior management functions, out of Canada. In this paper, we ask whether the broad empirical evidence supports the contention that head office function is being hollowed-out.

The analysis is based on a new data source that has emerged in the last ten years—a detailed count of the number of head offices in Canada and their employment provided by Statistics Canada's Business Register. We focus on the past four years (1999-2002), a period for which commentators have identified hollowing-out as an important phenomenon. It is also the period of time for which we have the most confidence in the quality of the data supplied.

- *The number of head office units increased slightly between 1999 and 2002.*

Between 1999 and 2002 the number of head office units increased from 3,936 to 3,969.

On an annual basis, the number of head office units increased the most in manufacturing (5.5%), real estate and rental leasing (4.4%), and information and cultural industries (4.2%). Head office counts declined the most in wholesale trade (3.0%), mining and oil and gas extraction (2.8%), and construction (2.8%).

- *Employment in head offices increased marginally over the study period.*

Employment in head offices increased at an annualised rate of about 1%.

Employment growth was strongest in real estate rental and leasing (12.0%), professional and technical services (7.7%), and finance and insurance (6.9%). Employment declined in agriculture, forestry, fishing and hunting (5.4%), accommodation and food services (5.6%), and construction (4.7%).

- *Increasing the share of head office employment within a firm is generally associated with successful business strategies, where success is measured by employment growth.*

Firms with head offices that increased their share of firm employment in head offices also increased their total employment between 1999 and 2002. In contrast, those firms that reduced their head office share of employment experienced declining overall firm employment during the same period.

- *Head office employment is geographically concentrated in a few large urban centres—Toronto, Montreal and Calgary.*

By 2002, Calgary supplanted Vancouver as the most important head office centre in Western Canada. Consistent with popular perceptions, Toronto continued to consolidate its position as Canada's most important head office centre, while Montreal's head offices experienced a declining level of employment.

- *There is little evidence that head office employment is increasingly concentrated in large head office centres. This implies that there has not been an increase in the benefits of agglomerating employment in large cities, which might favour the location of head offices in U.S.*

Although head office employment grew rapidly in Calgary relative to other cities in Western Canada, Toronto and Montreal have grown at a slower rate than several smaller cities in Ontario (Hamilton and Ottawa) and Quebec (Quebec City).

1. Introduction

The possibility that Corporate Canada is being hollowed-out has received considerable public attention of late. The disappearance of the senior management of a company is seen by some to have deleterious consequences for the demand for services in the Canadian economy and opportunities for Canadians.

A previous generation of analysts decried the multinational operating in Canada, describing it as having only truncated functions with little or no operations in the areas of research and development. These functions were seen to be key to the development of a research capacity that yielded substantial externalities to the rest of the Canadian economy.¹

Today, a new generation of analysts is worried that Canada is moving in a number of areas to the hollowed-out corporation that not only lacks the capacity to perform research and development, but that no longer will demand the services of financial markets or of key business services. Since the financial and business services industries are amongst the fastest growing and highest paying sectors, hollowing-out is seen to decrease Canada's growth prospects.

Hollowing-out is perceived to be associated with the decline in the management function. In particular, it is related to the movement of head office employment, and especially senior management functions, out of Canada. Consequently, any study of this phenomenon that tries to interpret data on the importance of head offices must consider what factors are leading to changes in the management of Canadian corporations, and in a larger context, to changes in management of North American corporations.

Two questions need to be addressed to help us understand the phenomenon. First, is the amount of management in corporations, in general, decreasing or increasing? Are firms trimming their management component or are they scaling the management component up? Second, is the physical location of the headquarters of firms changing, and in particular, is headquarter employment increasingly being located outside of Canada? Are firms hollowing-out their head office function? All of this may be the cause of changes in the amount of management found in Canada. Let us deal with the requirements to answer each question in turn.

The first question requires an assessment of the economics of management (see Caves and Kreps, 1993). Management performs the planning, organising and control functions in companies. In the first instance, the number of managers will depend on the size of the firm. But it will also depend on the efficiency of the management process. Large corporations have grown because of their ability to ingest, assess and use information. All of this is extremely complex and the responsibility for co-ordinating this process falls mainly, but not exclusively, to management. The information and communications technology (ICT) revolution has given new tools to management to acquire and organise information. These technologies have increased the efficiency of corporations and led to cost reductions (Baldwin and Sabourin, 2002). It is not implausible to argue that some of these reductions are found in the number of managers that are required to perform management functions.

¹ For a discussion of whether this view of the multinational is correct, see Baldwin and Hanel (2000).

But we must be careful not to conclude that the ICT revolution may just have reduced the number of managers. In some instances, it may have extended the ability of managers to control decentralised operations. It may have allowed supervisory personnel who previously were located within production facilities to be moved to centralised head office locations. Industries where the balance of economies of centralisation versus decentralisation had previously weighed in favour of decentralisation may have moved to a more centralised model with the ICT revolution. In this case, we might well expect the employment in head offices to increase.

Answers to the second question, as to whether the management needed for Canadian operations is increasingly being located abroad, require the use of location theory (see Duranton and Puga, 2002). The management function associated with the corporate head office can be located in a coterminous fashion beside the production process or separate from it. Large firms are characterized by multi-plant operations that are located in multiple locations. Therefore, even if the head office locates beside one of its firm's plants, only one of these locations is likely to be chosen (unless multiple head offices are formed).

It is to economic geography that we need to turn for an explanation of which, if any, of its production locations is chosen. A firm may also choose to locate its head office away from all of its production locations and it may choose a Canadian or foreign location. Economic geographers have tended to rely on urban agglomeration economies to explain which of several locations is chosen for a head office. Specifically, the argument is made that head offices need to be located where a large professional workforce with various specialisations—from financing, to accounting, to other professional qualifications—is available (see Davis and Henderson, 2003).

Recent work has shown that the ICT revolution has affected large cities more than small, with employment in ICT industries disproportionately concentrating in large Canadian metropolitan areas (Beckstead *et al.*, 2003). If agglomeration economies that are affecting management location are greatest in the consumption of ICT services, we might expect to see some relocation of head offices to larger cities. If these agglomeration economies are stronger in U.S. cities, we may find head offices moving from Canada to the United States.

In each company, decision-makers will trade-off the advantages of having a head office in a large urban area where these services are available against the increased co-ordination costs of running many plants located at a distance from the urban area. Once again, technological progress in the area of transportation and communications may have affected changes in these locational patterns and where head offices are locating. Falling transport and communications costs may have made it easier to run a far-flung company from a central point (Duranton and Puga, 2002).

In summary, what is happening to the management function in Canada will depend upon the inexorable economies that are affecting the size of the management workforce across North American and changes that are occurring in the location of head office functions. Depending on the nature of these economies, the head office management function may be increasing or scaling-up because the centralising forces are stronger than decentralising forces. On the other hand, head office employment may be declining either because of increased management efficiencies (trimming down) or the hollowing-out of the head office function in Canada. To

better understand trends in head office employment in Canada, we have to know whether head offices are scaling-up, trimming-down or hollowing-out.

In this paper, we start the process of asking what is happening to Canadian head offices. To do so, we utilise a new data source that has emerged in the last ten years—a detailed count of the number of head offices in Canada and the employment therein provided by the Business Register of Statistics Canada. We ask two questions: (1) have the number of head offices declined relative to the total population of production units; and (2) what is happening to employment in these units?

The rest of the paper is organised as follows. In Section 2, we discuss the data used in the analysis, paying special attention to the reliability of our main data source and how we define the head office function. Section 3 analyses broad trends in terms of numbers of head offices and their employment levels. Since aggregate trends can mask considerable variation across industries, Section 4 looks at trends in the number, employment and average size of head offices across various industries. Section 5 looks into whether the head office function within enterprises has been increasing or decreasing over time, and especially whether there is an association between these trends and the success of enterprises. Section 6 provides an analysis of the geography of head office employment across provinces (and territories) and selected cities. It tests whether head office employment is concentrated in space and whether this concentration is increasing. Section 7 includes a brief conclusion.

2. Data

In order to address the research questions outlined above, we make use of Statistics Canada's Business Register. The Business Register keeps track of Canada's companies and their respective production units. It serves as a population base for business surveys, which require an accurate representation of the population from which random samples can be drawn. The register contains production units that are linked together into firms or enterprises. Also, data on employment are maintained on the file since surveys are often stratified by size.² The Business Register needs to contain information not only on whether a unit exists, but also the size of that unit.

In the Business Register, head offices are treated as a type of production unit. A head office is only recognised as a production unit if it is located in a separate physical location.³ A head office that is co-located with a production unit (e.g., a manufacturing plant) would not be counted as a separate unit (Armstrong, 1996). Given that most enterprises in Canada are small, encompassing

² In order to minimize the impact of seasonal fluctuations in employment, the Business Register records the employment size of production units according to their maximum monthly employment over the previous twelve months.

³ Within the Business Register, production units are defined as economic entities that combine labour and capital, together with other inputs, to produce a specific set of goods and/or services. Normally, these production processes are undertaken at or from a single physical location for which, at minimum, employment data are available (Armstrong, 1996).

one production unit, most do not have separate head offices. Therefore, the analysis presented below includes predominantly large, multi-unit enterprises.

There are two types of head office units included in the Business Register, ancillary and non-ancillary. This distinction reflects the classification of production units into those that are central to the production process and those that are ancillary.⁴ The latter will contain units that are as varied as warehouses, sales offices, transportation units, and wholesaling functions, as well as head offices. Non-ancillary head offices are considered to be central to the production process in that they charge for their services, and therefore, act more as a separate, rather than an ancillary, unit. Head offices that serve several different and unrelated industries within a firm are more likely to be non-ancillary.⁵ In this study, we examine both groups of head offices taken together. Appendix A investigates the relative importance of the two.

Any business register needs to be kept informed of the number of ancillary units, because knowledge of the activities of these units is essential if the total activities of a firm are to be accurately measured by different surveys. For example, if employment is collected at the firm level from one survey and from production units in another survey, the two estimates of employment will not be the same if a firm's employment in its ancillary units is omitted from the production unit survey.

The importance that has been given to reconciling firm-based and production unit-based estimates has increased in recent years with recent initiatives by Statistics Canada to produce more detailed provincial estimates of economic activity.⁶ As a result, the Business Register has placed more effort into maintaining an accurate picture of ancillary establishments, and has a special head office survey to investigate some of the activities of these units.

With the implementation of the North American Industrial Classification System (NAICS), the present Business Register contains a more accurate picture of head office units from 1999 to the present than existed previously. Greater attention has been paid both to establishing the existence of a unit and in providing an estimate of its economic importance, as measured by its employment. For this reason, this paper focuses on the period from 1999-2002.

Despite these improvements, it should be recognised that we are using the Business Register data for purposes for which they were not originally designed. A register does not always provide a real-time picture of changes. The operational composition of most firms is updated annually, but some may be updated over an even longer period of time. Consequently, there will be lags in the updating of some information on the register.

⁴ "An ancillary activity is a supporting activity undertaken within an enterprise in order to create the condition within which the principal or secondary activities can be carried out; ancillary activities generally produce services that are commonly found as inputs into almost any kind of productive activity and the value of an individual ancillary activity's output is likely to be small compared with the other activities of the enterprise (for example, cleaning and maintenance of buildings)" (Statistics Canada, 2002).

⁵ For a study of diversification in Canada, see Baldwin, Beckstead, Gellatly and Peters (2000).

⁶ Statistics Canada has implemented a series of programs to improve provincial economic estimates, which are known collectively as the Project to Improve Provincial Economic Statistics (PIPES).

Nevertheless, in other research (Baldwin, Beckstead and Girard, 2002), we have found that over four- to five-year periods, the Business Register adequately captures trends in entry and exit. We rely on this finding to choose a period of time from 1999-2002 in order to discern the trends that have been developing in the importance of head offices.

In what follows, we have used the Business Register to track head offices over the last 4 years and have classified these by NAICS sector. The NAICS classification system has several changes from the previous SIC system. Perhaps the most important for our purpose is the fact that there is now a new industry⁷ entitled—‘Head Offices’. When we first tabulated the results, we found that in several sectors, head offices were falling in numbers and employment (e.g., Mining and Manufacturing). Meanwhile, the number of head offices and employment in the Head Office industry was increasing, suggesting that some head office units were reclassified into this new Head Office industry. To eliminate the effects of this reclassification process, in the main body of this paper we reclassified all Head Office industry units to the NAICS industry classification of the enterprise to which they belong.⁸

Finally, it should be noted that we are not measuring all management personnel in this paper. As pointed out above, many managers work right at the production centre or in establishments that are ancillary but are not considered to be main management centres. We are only examining the units where a separate management function exists and the number of employees in these units.

3. Size of the head office sector in the economy

We first examine the size of the head-office sector by using the number of head-office units (see Table 1). Firms in the Business Register are divided into an integrated portion (IP) and a non-integrated portion (NIP). For the purpose of this exercise, we examine only the IP. The IP contains firms that are large and/or complex and is, broadly speaking, updated on an annualised basis. These are the firms most likely to have a separate head office unit or units.⁹

The number of production units¹⁰ in the IP of the Business Register increased from over 217,000 to around 222,000 between 1999 and 2002. At the same time, the number of units that were classified as head offices also increased marginally from 3,936 to 3,969. As a percentage of the total number of IP production units, Head Offices fell by an insignificant amount from 1.81% to 1.78%. On the basis of these data then, there is little evidence that head offices have diminished in importance.

⁷ Technically under the NAICS, we are using the national industry level to identify the Head Office industry (NAICS 551114).

⁸ The classifications of head offices in all other (non-Head Office) NAICS industries were left unaltered.

⁹ Dividing enterprises within the IP by size class indicated that small enterprises were unlikely to have separate head office units. Given that the NIP is dominated by small enterprises—93% of the NIP contains enterprises that have less than 10 employees—its enterprises likely account for only a small proportion of head offices and their employment. In short, we are confident that the results presented herein provide a reasonably comprehensive depiction of head office activity in Canada over the study period.

¹⁰ The production units used in this study are restricted to only those that had employment recorded for them in the Business Register.

The Business Register also allows us to determine how many enterprises possessed separate head-office units. As noted above, not all enterprises will report that the management function is undertaken at a separate facility. Over the period from 1999 to 2002, the number of enterprises in the IP section of the Business Register that reported a Head Office remained static, accounting for approximately 3% of all enterprises in the IP. Of those enterprises with a head office, most reported only a single head office unit. But some reported multiple units that fulfilled the function of a head office. Once again, this number also increased marginally over the period of study—from 249 to 254.

The conclusion to be drawn from Table 1 is that, whether we examine the evidence on units that are classified as head offices or enterprises with head offices, there is no dramatic decline in the sector as a whole.

Table 1. Overview of the importance of head offices (HO) in the Business Register

	1999	2000	2001	2002
<i>Production units</i>				
Total IP units	217,490	218,323	217,682	222,412
HO units	3,936	3,893	3,918	3,969
HO units as a proportion of total IP units	1.81%	1.78%	1.80%	1.78%
<i>Enterprises</i>				
Total IP enterprises	106,073	105,365	102,307	105,809
IP enterprises with HO units	3,363	3,313	3,311	3,357
Proportion of IP enterprise that have HO units	3.17%	3.14%	3.24%	3.17%
IP enterprises with only one HO	3,114	3,060	3,058	3,103
IP enterprises with multiple HO units	249	253	253	254

Source: Based on the Business Register for early June of each year.

4. Size of the head office sector by industry

The fate of the head-office sector may vary across industries. This might simply be due to differential rates of industry employment growth—e.g., declining industries may experience falling head office numbers and employment. However, efficiency gains in the management process and the hollowing-out process may also differentially affect industries. For example, access to large and efficient capital markets in the U.S. may be far more attractive for industries that require large infusions of capital to grow (e.g., mining and oil and gas extraction).

In order to investigate whether the hollowing-out phenomenon varies by sector, we examine three separate characteristics of several sectors as defined by the NAICS. The first is whether the number of head offices is changing (Table 2, Panel A). The second is whether the employment in these head offices has increased or decreased (Table 2, Panel B). The third is whether the employment per head office has risen or fallen (Table 2, Panel C).

When we examine the growth in number of head offices in the business sector, we conclude that this sector has been relatively stable. The total number of units classified as head offices has grown slightly—by about 0.3% annually over the period. But there are sectors where decline has occurred. Wholesale trade has seen an annual fall of 3.0% in the number of head offices over the four-year

period. Mining and oil and gas extraction and construction have both seen an annualised decline of 2.8%. On the other hand, there have been increases of 5.5% in manufacturing, 4.4% in real estate and rental leasing, and 4.2% in information and cultural industries.¹¹

Employment in head offices varies widely by sector. Manufacturing accounts for almost 25% of all head office jobs. Retail trade, with about 14%, follows this. Each of finance and insurance, utilities, wholesale trade, and information and cultural industries account for between 7% and 9%, and mining and oil and gas extraction for about 5%.

As with head-office units, employment in head offices has increased slightly, by about 1% annually in the overall business sector. There have been substantial increases in real estate rental and leasing (12.0%), professional, scientific and technical services (7.7%), finance and insurance (6.9%), health care and social assistance (4.6%), and transportation and warehousing (4.3%).

The declines were typically largest in the same sectors where numbers of head offices were falling. This was true of agricultural, forestry, fishing and hunting (5.4%), accommodation and food services (5.6%), and construction (4.7%).

In absolute terms, 'other' services lost the largest number of jobs (about 2,700), while utilities and manufacturing shed 900 and 600 jobs, respectively. Positive increases have occurred in finance and insurance (2,800), transportation and warehousing (1,700) and retail (1,400). Finance and insurance has probably been inflated by reallocation of employment by coding improvements in the files, which has shifted some employment out of 'other' services into finance and insurance, making employment trends in both suspect.

The final piece of evidence on the downsizing of head offices comes from the average size of employment in a head office (Table 2, Panel C). Generally, we find only a slight increase in the average size of head office units. As with numbers of head offices and head office employment, the aggregate trend masks considerable variation at the industry scale—there are considerably more industries that experience an increase in head office size than experience a decrease.

Together the changes in number of head offices, the employment therein and the average size of a head office aid us to discriminate among alternate explanations of events—whether the management function is being hollowed-out, trimmed-down or scaled-up. If the number of head offices is increasing, total employment is increasing and the average size has gone up, then the balance of evidence is that management is expanding (scaled-up). This may occur simply because the management function within an industry has become more important. However, as noted above, head office employment may also have scaled-up because investments in information and communication technologies have made it more efficient to concentrate management functions in head offices rather than in production units. In this sense, scaling-up may be associated with the increasing management reach of head offices. It is always possible of course that the scaling-up of head office management is being accompanied by a certain amount of transfer of management function abroad (hollowing-out), but the balance of factors in this case suggests this is probably not very important.

¹¹ Some but not all of this has come from a reassignment of NAICS codes out of "other" services in 2000 as the coding improved.

Table 2. Head office growth by NAICS sector, 1999-2002**Panel A: Count of Head Offices**

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	44	46	45	42	-1.5%
21	Mining and Oil and Gas Extraction	146	140	138	134	-2.8%
22	Utilities	32	32	31	35	3.0%
23	Construction	137	130	127	126	-2.8%
31-33	Manufacturing	616	628	661	723	5.5%
41	Wholesale Trade	468	443	432	427	-3.0%
44-45	Retail Trade	919	900	897	883	-1.3%
48-49	Transportation and Warehousing	169	172	170	177	1.6%
51	Information and Cultural Industries	113	125	128	128	4.2%
52	Finance and Insurance	128	128	126	129	0.3%
53	Real Estate and Rental and Leasing	124	123	135	141	4.4%
54	Professional, Scientific and Technical Services	98	97	97	98	0.0%
55	Management of Companies	15	11	13	9	-15.7%
56	Administrative and Support, Waste Management and Remediation Services	97	86	90	94	-1.0%
61	Education Services	18	19	18	19	1.8%
62	Health Care and Social Assistance	281	288	293	293	1.4%
71	Arts, Entertainment and Recreation	51	55	56	54	1.9%
72	Accommodation and Food Services	328	324	313	308	-2.1%
81	Other Services (except Public Administration)	152	146	148	149	-0.7%
Total		3,936	3,893	3,918	3,969	0.3%

Panel B: Head Office Employment

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	450	556	484	381	-5.4%
21	Mining and Oil and Gas Extraction	7,997	6,783	7,308	8,343	1.4%
22	Utilities	14,987	14,145	13,802	14,066	-2.1%
23	Construction	1,691	1,507	1,380	1,465	-4.7%
31-33	Manufacturing	42,079	41,799	39,908	41,434	-0.5%
41	Wholesale Trade	11,833	12,420	12,983	12,674	2.3%
44-45	Retail Trade	23,392	22,944	24,839	24,761	1.9%
48-49	Transportation and Warehousing	12,585	11,713	12,830	14,279	4.3%
51	Information and Cultural Industries	10,887	10,709	11,604	11,092	0.6%
52	Finance and Insurance	12,686	15,061	15,157	15,486	6.9%
53	Real Estate and Rental and Leasing	2,015	2,206	2,553	2,833	12.0%
54	Professional, Scientific and Technical Services	3,675	3,556	4,249	4,586	7.7%
55	Management of Companies	584	265	277	235	-26.2%
56	Administrative and Support, Waste Management and Remediation Services	2,218	2,265	2,183	2,454	3.4%
61	Education Services	283	295	270	303	2.3%
62	Health Care and Social Assistance	6,686	7,000	7,529	7,648	4.6%
71	Arts, Entertainment and Recreation	764	851	801	818	2.3%
72	Accommodation and Food Services	5,322	4,747	4,617	4,481	-5.6%
81	Other Services (except Public Administration)	4,916	2,912	2,827	2,223	-23.2%
Total		165,050	161,734	165,601	169,562	0.9%

Panel C: Employment per Head Office

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	10.2	12.1	10.8	9.1	-3.9%
21	Mining and Oil and Gas Extraction	54.8	48.5	53.0	62.3	4.4%
22	Utilities	468.3	442.0	445.2	401.9	-5.0%
23	Construction	12.3	11.6	10.9	11.6	-2.0%
31-33	Manufacturing	68.3	66.6	60.4	57.3	-5.7%
41	Wholesale Trade	25.3	28.0	30.1	29.7	5.5%
44-45	Retail Trade	25.5	25.5	27.7	28.0	3.3%
48-49	Transportation and Warehousing	74.5	68.1	75.5	80.7	2.7%
51	Information and Cultural Industries	96.3	85.7	90.7	86.7	-3.5%
52	Finance and Insurance	99.1	117.7	120.3	120.0	6.6%
53	Real Estate and Rental and Leasing	16.3	17.9	18.9	20.1	7.3%
54	Professional, Scientific and Technical Services	37.5	36.7	43.8	46.8	7.7%
55	Management of Companies	38.9	24.1	21.3	26.1	-12.5%
56	Administrative and Support, Waste Management and Remediation Services	22.9	26.3	24.3	26.1	4.5%
61	Education Services	15.7	15.5	15.0	15.9	0.5%
62	Health Care and Social Assistance	23.8	24.3	25.7	26.1	3.1%
71	Arts, Entertainment and Recreation	15.0	15.5	14.3	15.1	0.4%
72	Accommodation and Food Services	16.2	14.7	14.8	14.5	-3.6%
81	Other Services (except Public Administration)	32.3	19.9	19.1	14.9	-22.7%
Total		41.9	41.5	42.3	42.7	0.6%

Source: Special tabulation, Business Register.

There are a number of industries in which numbers, employment and employment per head office generally all increase. These are: finance and insurance; real estate and leasing; arts, entertainment and recreation; transportation and warehousing; professional and technical services, education services; and health care and social assistance. It is less likely that these industries' head offices are being hollowed-out.

A decline in the number of head offices, combined with declining employment and employment per head office unit, is likely to be indicative of a general decline in the head office function—either for efficiency reasons or for reasons relating to hollowing-out. Hollowing-out can come about either when units are being closed down and moved abroad or when the size of head office units is reduced. Of course the declining size of head office units may be due to economies of management resulting from new ICT technologies, or because head office functions are being decentralised geographically. There are two industries in which all three of the characteristics examined here decline. These are the primary sector (agriculture, forestry, fishing and hunting) and construction.

A decline in numbers of head office units that is accompanied by an increase in employment suggests that there has been some trimming in terms of numbers of head offices but that the head office has extended its management reach. There are fewer head offices required but the head office staff has been augmented to handle a broader array of functions—broader either in terms of industries or geographic coverage. This is less likely to occur in a situation where hollowing-out is of much importance. It is always possible of course that declining numbers of head offices is partially related to hollowing-out, although an accompanying increase in total employment in head offices would suggest this is less likely.

The industries that fall within this category are mining and oil and gas extraction, wholesale and retail trade, and administrative and support, waste management and remediation services. The distributive trades sector (retailing and wholesaling) has been undergoing dramatic changes in the manner in which businesses make use of ICT—that allow a more extensive distribution system to be controlled from a smaller number of somewhat larger centres. The same appears to be true of the primary sector extractive industries. Of course, the recent consolidation trend in the latter has probably influenced head-office consolidation.

An increase in numbers of head offices, but a decrease in head office employment may suggest that the management function has become more decentralised (there are more head offices serving the universe of production establishments) while becoming more efficient (i.e., requiring less managers per unit).

Manufacturing has seen an increase in the number of head office units, but a decline in the average employment per head office. This is compatible with an explanation that information and communication technologies have made this industry more efficient—but also with a gradual removal of some management functions from Canada to locations abroad.

Utility head offices also increased in terms of total numbers but the average size of these has become smaller. This probably reflects a general move to deregulation and increased white-collar efficiencies in this industry. Competition has been regulated closely in this industry, but the severity of this regulation has been loosened in recent years.

5. Size of the head office function within enterprises

To this point, we have measured the importance of head offices primarily in terms of their number and employment levels, both within the business population as a whole and across industries. We adopt an industry perspective that, while informative, is limited—for example, changes in head office employment have been examined independently of changes in total industry employment. In this section, we take a different perspective by asking whether head office employment is increasing relative to total employment within individual enterprises. We also ask whether the number of head offices within individual enterprises is increasing or decreasing. This allows us to investigate whether changes in the management function, as measured by employment or numbers of head office units, is related to increasing employment within enterprises.

It is important to observe how the head office function within individual enterprises is changing over time, because it is ultimately enterprises that control how management functions are distributed across their various operating units. Different management strategies—which reflect the technological and competitive environment in which firms operate—may have varying effects on the role of the head office within an enterprise. As noted above, it may be that an improvement in information and communication technology has allowed management functions to be increasingly concentrated in one head office. These functions may be those that were once performed in production units (e.g., human resource management) or other head offices. In both instances, head office management is increasing its reach. Alternatively, head offices may be

declining in importance within corporations in term of employment or numbers. This may be because of increasing efficiencies resulting from, again, the use of information and communication technology. The head office function may also be declining because of the dispersal of head office activity to production units, or the relocation of head office employment abroad (hollowing-out).

It is difficult to infer from the Business Register which strategies underlie firms' decisions to increase or decrease the number of head offices and head office employment within their firms. Yet, it is possible to ask whether those firms that have experienced a growth or decline in the head office management function over time have been more or less successful—where success is defined in terms of overall employment growth. If growing enterprises were also those that were reducing their head office function, then it would be reasonable to conclude that a decline of the head office function in Canada (whether it is from management efficiencies or hollowing-out) was the result of effective business strategies.

To test this proposition, we assembled a panel of enterprises that remained in business and maintained at least one head office over the four-year study period, of which there were approximately 2500. We divided these enterprises into those whose head office share of employment was growing, declining or staying the same. The sample was also divided into those enterprises that increased, decreased or kept their number of head offices constant. Panel A of Table 3 presents counts of enterprises for each of these categories and Panels B and C give the employment levels of these same enterprises for 1999 and 2002, respectively.

Among the enterprises in the sample, 19% had head offices that increased their share of enterprise employment (see Table 3, Panel A). In 1999, these enterprises accounted for 43% of continuing enterprise employment and by 2002 their share had increased to 49% (see Table 3, Panels B and C). Some 12% of enterprises saw their head office employment decline as a proportion of overall employment. In 1999, these enterprises accounted for 36% of continuing enterprise employment and by 2002 their share had declined to 31% (see Table 3, Panels B and C). These contrasting findings suggest that the strategies pursued by some growing enterprises are associated with an increasing share of employment in head offices. This may have occurred because managers in general have become more important or because managers outside of head offices have been shifted to head offices—head offices were increasing their management reach.

Enterprises can reorganise their location of management employees by concentrating them in head offices. They can also do so by changing the number of head office units. Increasing the number of head office locations might be associated with increasing the geographic and/or the industrial scope of an enterprise. Decreasing the number of head offices might be related to increasing management reach and/or a decline in the geographic and/or industrial scope of an enterprise.

Only 5% of enterprises changed the number of head offices under their control, with slightly more reducing rather than increasing the scope of their head office function. Although accounting for a small proportion of enterprises, those that changed their head office scope accounted for 41% of employment (see panel B). These were amongst the largest enterprises that had separate head office units.

Table 3. Head office employment share change of continuing enterprises, 1999-2002**Panel A: Counts of Enterprises**

		<i>Head Office Employment Share</i>			
		Growing	Declining	Same	Total
<i>Head Office Units per Enterprise</i>	Growing	46 (2)	16 (1)	0 (0)	62 (2)
	Declining	26 (1)	51 (2)	0 (0)	77 (3)
	Same	399 (16)	240 (10)	1,742 (69)	2,381 (94)
	Total	471 (19)	307 (12)	1,742 (69)	2,520 (100)

Note: Percentage shares of the total continuing enterprise count are in parentheses.

Panel B: Enterprise Employment in 1999

		<i>Head Office Employment Share</i>			
		Growing	Declining	Same	Total
<i>Head Office Units per Enterprise</i>	Growing	216,710 (11)	153,463 (8)	- (0)	370,173 (19)
	Declining	106,482 (6)	307,314 (16)	- (0)	413,796 (21)
	Same	500,323 (26)	237,634 (12)	412,337 (21)	1,150,294 (59)
	Total	823,515 (43)	698,411 (36)	412,337 (21)	1,934,263 (100)

Note: Percentage shares of total continuing enterprise employment are in parentheses.

Panel C: Enterprise Employment in 2002

		<i>Head Office Employment Share</i>			
		Growing	Declining	Same	Total
<i>Head Office Units per Enterprise</i>	Growing	209,341 (10)	54,219 (3)	- (0)	263,560 (13)
	Declining	226,244 (11)	375,188 (18)	- (0)	601,432 (29)
	Same	593,344 (28)	228,191 (11)	412,337 (20)	1,233,872 (59)
	Total	1,028,929 (49)	657,598 (31)	412,337 (20)	2,098,864 (100)

Note: Percentage shares of total continuing enterprise employment are in parentheses.

Source: Special tabulation, Business Register.

It is noteworthy that total employment growth occurred within enterprises that reduced their number of head office units (see Table 3, panels B and C). On the other hand, those enterprises that increased their number of head offices typically experienced declining employment levels over the period. Overall success appears to be associated with reducing the geographic/industrial scope of the enterprise and/or increasing management reach through the consolidation of employment in fewer head offices.

The share of head office employment by itself is positively related to employment growth within enterprises. The number of head offices within an enterprise by itself is inversely related. Table 3 demonstrates the two influences reinforce one another, since those enterprises either with increasing (decreasing) shares and decreasing (increasing) numbers have the strongest increase (decrease) in employment over the period.

Hollowing-out is most likely occurring in enterprises that are both reducing their head office share of employment and the number of head office establishments. These enterprises accounted for 16% of total employment in 1999 and increased their employment share to 18% in 2002.

What then do these results imply regarding the hollowing-out of the head office function of Canadian enterprises? It is not apparent from the data that those enterprises that are the most successful are also those whose head office function is in decline. By and large, the opposite appears to be true. Enterprises that are increasing their head office share of employment and have fewer head offices (increasing management reach) are growing more rapidly than those that are decreasing their head office share but increasing their number of head offices. Therefore, the underlying dynamics of the Canadian business sector overall are not consistent with the wholesale hollowing-out of the head office function. What we observe in the micro-data corroborates what was observed in the aggregate data.

6. Geography of the head office function

To this point in the analysis, we have observed how head office employment has evolved in the business sector, across industries and within enterprises. This has provided, we would argue, a reasonably comprehensive view of how the head office function has changed within Canada over the past four years. However, left unanswered is how the geographical distribution of the industry has evolved.

As we noted in the introduction, the hollowing-out process is related to issues of location. There are two broad factors influencing the location of head offices. The first is the need to have access to specialised inputs, which are mostly to be found in large cities. The second factor is the increasing application of information and communication technology. These new technologies may have tipped the scales towards concentration of the head office function in centralized offices, rather than a more dispersed geography. In turn, if agglomeration economies remain strong, these head offices may be attracted to larger, specialized head office centres, either in Canada or abroad. Therefore, as much as information and communication technologies might facilitate the hollowing-out of the Canadian head office sector, they might also lead to the hollowing-out at the sub-national scale. If we observe that this process is occurring across Canadian regions, it may also be happening nationally as well.

Each head office unit in our data set is identified not only in terms of its industry and employment but also by its geographic location, which includes the province and the city in which the head office unit is located. A discussion of head office employment across provinces and selected cities follows.

Across provinces, head office employment is highest in Ontario and Quebec. These provinces together account for approximately three-quarters of head office employment (see Table 4). Head office employment in Alberta, British Columbia and Manitoba is also significant. For the remaining provinces, head office employment is fairly small, but with a wide variation in head office employment levels given the size of their economies.

Table 4. Head office employment by province and territories

	1999	2000	2001	2002	Annual Growth
Newfoundland and Labrador	1,076	952	984	988	-2.8%
Prince Edward Island	121	130	129	136	4.0%
Nova Scotia	2,500	2,407	2,478	2,455	-0.6%
New Brunswick	3,985	3,261	2,951	4,013	0.2%
Quebec	41,853	41,512	39,420	40,846	-0.8%
Ontario	67,919	66,872	72,657	73,566	2.7%
Manitoba	8,009	8,186	8,355	7,152	-3.7%
Saskatchewan	2,964	2,867	2,695	2,763	-2.3%
Alberta	16,975	18,643	19,286	21,058	7.4%
British Columbia	19,592	16,848	16,566	16,505	-5.6%
Territories ^a	56	56	80	80	12.6%
Total	165,050	161,734	165,601	169,562	0.9%

^aThe three territories were aggregated into one category in order not to reveal information on individual respondents.

Source: Special tabulation, Business Register.

For Alberta, Manitoba and New Brunswick, head office employment is well above what we would expect given their economic weights relative to provinces of similar size (and location). New Brunswick's employment is larger than Nova Scotia's even though New Brunswick by all measures has a smaller economy. Similarly, Manitoba's head office employment is more than double that of Saskatchewan's, even though their economies are similar in size. Finally, Alberta's employment is larger than British Columbia's in 2002. This is the case even though Alberta has a smaller economy. There is a clear tendency for head office employment to concentrate in particular places.

Over the study period, growth in absolute terms was strongest in Ontario (5,500) and Alberta (4,000). These were also the provinces with the highest rates of growth, outside of Prince Edward Island, which started from a very small base. British Columbia and Quebec experienced the largest declines in employment, 3,000 and 1,000 respectively. Quebec's decline, however, was relatively small compared to its overall base of employment, and was reversed in 2002. In terms of average annual rates of decline, Manitoba's head office employment was more rapid (-3.7% versus -0.8%) than Quebec's. But British Columbia employment fell at the fastest rate (-5.6% per annum) of all.

The provincial picture is one of head office employment that tends to be concentrated in some regions and not others and one where employment growth is focussed in Ontario and Alberta. Employment across cities reveals an even more concentrated picture of employment. The largest concentrations of head office employment are in Toronto, Montreal, Vancouver and Calgary (see Table 5). Combined, these four cities account for about 45 percent of overall employment in Canada, but around 70 percent of head office employment.

Table 5. Head office employment by selected cities^a

	1999	2000	2001	2002	Annual Growth
Halifax	2,086	1,952	1,885	1,868	-3.6%
Quebec City	1,757	1,926	1,972	2,550	13.2%
Montreal	37,110	36,416	34,173	34,587	-2.3%
Ottawa	3,755	3,814	5,347	4,768	8.3%
Toronto	51,394	50,982	54,684	56,022	2.9%
Hamilton	1,855	1,797	2,002	2,358	8.3%
Winnipeg	7,535	7,713	7,939	6,722	-3.7%
Calgary	11,946	13,672	14,794	16,167	10.6%
Edmonton	3,574	3,568	3,090	3,415	-1.5%
Vancouver	17,295	14,630	14,523	14,515	-5.7%

^aCities are defined using their Census Metropolitan Area boundaries.

Source: Special tabulation, Business Register.

The other cities included in Table 5 have much lower employment levels than the top four and form a second-tier of head office centres. Within this group, some cities are clearly more specialised in head office employment than are others. Winnipeg's head office employment when compared to cities of equal size (e.g., Quebec City) is much larger. Edmonton has less than a third of Calgary's head office employment, even though both are of roughly equal size. Halifax, with about half the population of Hamilton, has roughly the same level of head office employment. Therefore, like provinces, one of the main characteristics of the geography of head office employment is that it tends to concentrate in space.

The fact that head office employment tends to concentrate in a few cities, combined with the geographic distribution of these cities, is suggestive of two things. First, strong agglomeration economies are likely associated with the head office function. Some cities have built up over time the necessary concentrations of producer services and pools of highly skilled labour that head offices require as inputs, leaving other cities at a disadvantage. If agglomeration economies were weak, we would observe a much more even distribution of head office employment across cities (and provinces).

Second, some cities are probably operating as regional head office centres. Winnipeg is likely a regional centre for the eastern prairies, which is in part a reflection of its historic roots as the gateway to the west. Similarly, Calgary may be performing the same function for Alberta, Toronto for Ontario, and Montreal for Quebec. Other cities in these regions are effectively in the shadow of these head office centres: Edmonton is in the shadow of Calgary, Hamilton of Toronto and Quebec City of Montreal. The presence of regional centres reflects the fact that some businesses operate only in regional markets and that national firms (e.g., the chartered banks) probably have smaller regional head offices that serve their geographically dispersed production units.

As noted above, the implementation of new information and communication technology may have a strong influence on the geography of head office employment. If these new technologies make it easier to manage production activities across longer distances, head office employment may be concentrating in fewer centres. Moreover, increased reliance on information and communication technologies may make larger urban centres particularly attractive because related services are highly concentrated in these cities (Beckstead *et al.* 2003).

Employment trends across cities can provide us with a perspective on whether we are observing the further geographic concentration of head office employment. For those cities that might reasonably be considered both national and regional head office centres—Toronto, Montreal and Calgary—the pattern reflects the popular perception that Montreal is declining in terms of its head office function, Toronto is rising and Calgary is catching up to both (see Table 5).

In Western Canada, the rise of Calgary is noteworthy. Winnipeg, Edmonton and Vancouver, by way of contrast, are declining in head office employment. This was particularly true of Vancouver, which in 1999 was a larger head office centre than Calgary, but by 2002 had been surpassed by Calgary. The pattern in the west is one that is consistent with the increased concentration of head office employment, with Calgary being the main beneficiary.

In Eastern Canada, there is less evidence of concentration. Certainly, Toronto has continued to reinforce its position as the most important head office centre. However, smaller cities like Hamilton, Ottawa and Quebec City have experienced growth rates that are much stronger than Toronto. Here there is evidence that the head office function is not concentrating but dispersing across cities. Therefore, the data are not consistent with the across-the-board concentration of head office activity.

What does this imply about the hollowing-out process? It is evident that agglomeration economies have a strong influence on the location of head offices. Head offices are concentrated in just a few cities. That being said, there is relatively little indication that there has been a structural change in the factors that determine head office location, and in particular an increased bias towards locating head offices in only a few large centres. If this were the case, it would strengthen the argument that large, specialised head office centres in the U.S., such as New York, Chicago, and San Francisco, might be increasingly attractive locations for Canadian head office employment. As it stands, the data tend not to support this contention.

7. Conclusion

The evidence indicates that the management function has been changing in the Canadian business sector over the last four years. This is a period that has experienced high rates of economic growth and the rapid adoption of information technologies.¹³ Throughout the 1990s, the Canadian economy has integrated more fully into the world economy, both in terms of increases in trade intensity and the extent to which outward flows of investment have come to balance the large traditional inward flows of foreign direct investment.

¹³ See Baldwin, Rama and Sabourin (1999).

With all of this has come a change in the importance of the management function in Canada. Some industries like construction and the primary sector (agriculture, forestry, fishing and hunting) have shed a considerable number of head office workers. In contrast, many others—information and cultural industries; finance and insurance; real estate and rental and leasing; arts, entertainment and recreation; transportation and warehousing; professional, scientific and technical services—have gained head office employment.

The manufacturing sector shed jobs, not because it has fewer head office units, but because the number of employees per head office declined. Utilities, an industry going through deregulation, followed the pattern of the manufacturing sector. Here declines occur primarily because of a decline in the number of employees per head office. A number of explanations are available for this: technologies may have improved efficiency, or outsourcing may be occurring.

What is noteworthy is the large number of sectors where there has been an increase in the amount of management in the average head office. This has occurred in construction, in accommodation and food services, in wholesale trade, in administrative support, in finance and insurance, in real estate, in arts and entertainment.

An increase in size of head office units is suggestive of an expansion in the responsibilities of management. These may occur because management activity that was once combined at the production units may have moved closer to the specialized functions contained at head office. Analysis of head office employment patterns over time within enterprises suggests this is likely the case. Moreover, it is those enterprises that are growing that are increasing the role of the head office function within their firms.

Although there is evidence that management functions have been increasingly concentrated in head office units, the factors driving this process do not seem to have greatly affected the geographic pattern of head office employment. The geographic concentration of head office employment does not appear to be increasing. If the hollowing-out process is being driven by factors that make large, specialised head office centres attractive, we would expect head office employment in Canada to be increasingly concentrated in these types of centres. At least over this relatively short period, we do not observe such a trend.

Overall, we find relatively few sectors or enterprises with patterns of decline in the head office function. Moreover, even in those cases where hollowing-out may be occurring we cannot rule out the impact of efficiencies in the management process on head office employment levels. That being said, it is also important to recognize that the data presented here do not capture the hollowing out of the senior management function, which involves relatively few individuals, and therefore, is not likely to have a large impact on the aggregate employment numbers presented here. Despite this shortcoming, the data do present us with a more comprehensive view of the role of management in total.

Appendix A: Ancillaries and head offices

Outside of the production area, economic activities take place in two different types of ancillary units. The first engage in basic management functions—coordination, organization, planning, and implementation. These activities may be closely tied into operations—indeed so closely tied that they are not separable for the purposes of measurement. When the basic measurement unit is a production unit (as opposed to an employee survey), the individuals engaged in management that are at the production facility cannot be separated from other employees. In the main part of this note, we measure the importance of management as the number and employment only as those that are found in separate head office units.

Head office units, however, vary in terms of their complexity. The first set are those that are not separable from the overall accounting system of the enterprise that they serve. These are referred to as ancillary head offices. The second set are those that are separate non-ancillary head offices. The business register defines these as those that receive a fee for their services. They will have revenues and costs that can be reported separately and that must be caught by a statistical system that is intent on summing all activities of individual units to achieve enterprise totals.

There are about the same number of the two types of head offices (Table A1). Although there has been a slight increase in the total number of head offices over the period, the number of non-ancillary head offices has declined slightly while the number of ancillary type head offices have increased slightly. Exactly the opposite is true of employment. Employment has decreased in the ancillary sector but has increased in the non-ancillary sector.

Not all ancillary units in the business register are head offices. Some handle functions such as wholesaling, storage, or transportation, where they offer a non-management support function. There has been a general increase in the number of these units and in the employment contained therein over our study period (Table A1).

The classification of a unit as head office or non-head office is sometimes difficult. There will invariably be personnel at each unit that have a supervisory role. And some will have responsibilities that may verge on a management function. A study of changes in management intensity must therefore be cognisant of a substitution of functionality over time. Therefore, we present in Table A2 essentially the same data as are presented in the body of the paper—but we add to all head offices (both ancillary and non-ancillary), those ancillary units that are not head offices. In all cases the units have been classified using the same methodology to produce Table A2.

Table A1. Head offices and ancillaries

Number of Units	1999	2000	2001	2002	Annual Growth
Ancillary Head Offices	1,954	1,987	2,011	2,049	1.6%
Non-Ancillary Head Offices	1,982	1,906	1,907	1,920	-1.1%
Non-Head Office Ancillaries	1,469	1,677	1,742	1,760	6.2%
Total Head Offices	3,936	3,893	3,918	3,969	0.3%
Total Ancillaries	3,423	3,664	3,753	3,809	3.6%
Unit Employment					
Ancillary Head Offices	119,695	117,420	115,737	116,349	-0.9%
Non-Ancillary Head Offices	45,355	44,314	49,864	53,213	5.5%
Non-Head Office Ancillaries	35,870	34,617	35,425	42,064	5.5%
Total Head Offices	165,050	161,734	165,601	169,562	0.9%
Total Ancillaries	155,565	152,037	151,162	158,413	0.6%
Employment per Unit					
Ancillary Head Offices	61.3	59.1	57.6	56.8	-2.5%
Non-Ancillary Head Offices	22.9	23.2	26.1	27.7	6.6%
Non-Head Office Ancillaries	24.4	20.6	20.3	23.9	-0.7%
Total Head Offices	41.9	41.5	42.3	42.7	0.6%
Total Ancillaries	45.4	41.5	40.3	41.6	-2.9%

Source: Special tabulation, Business Register.

Table A2. Head office and non-head office ancillaries**Panel A: Number of Units**

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	56	56	51	48	-5.0%
21	Mining and Oil and Gas Extraction	202	211	207	203	0.2%
22	Utilities	56	58	54	49	-4.4%
23	Construction	142	143	143	141	-0.2%
31-33	Manufacturing	1,572	1,716	1,644	1,687	2.4%
41	Wholesale Trade	594	581	591	590	-0.2%
44-45	Retail Trade	983	970	973	970	-0.4%
48-49	Transportations and Warehousing	191	211	215	235	7.2%
51	Information and Cultural Industries	155	156	161	158	0.6%
52	Finance and Insurance	225	260	273	274	6.8%
53	Real Estate and Rental and Leasing	126	126	139	164	9.2%
54	Professional, Scientific and Technical Services	115	109	138	144	7.8%
55	Management of Companies	16	14	16	12	-9.1%
56	Administrative and Support, Waste Management and Remediation Services	109	99	105	110	0.3%
61	Education Services	19	20	19	20	1.7%
62	Health Care and Social Assistance	282	289	294	297	1.7%
71	Arts, Entertainment and Recreation	51	55	56	54	1.9%
72	Accommodation and Food Services	349	339	329	326	-2.2%
81	Other Services (except Public Administration)	162	157	252	247	15.1%
	Total	5,405	5,570	5,660	5,729	2.0%

Panel B: Employment

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	530	612	548	434	-6.4%
21	Mining and Oil and Gas Extraction	9,439	8,563	9,526	10,521	3.7%
22	Utilities	17,548	16,276	14,865	15,013	-5.1%
23	Construction	1,701	1,573	1,431	1,512	-3.9%
31-33	Manufacturing	60,063	60,034	57,206	58,085	-1.1%
41	Wholesale Trade	14,578	15,157	16,135	15,545	2.2%
44-45	Retail Trade	25,226	24,258	26,236	26,218	1.3%
48-49	Transportations and Warehousing	13,800	13,272	14,958	23,286	19.1%
51	Information and Cultural Industries	13,407	11,356	12,300	11,797	-4.2%
52	Finance and Insurance	15,864	19,177	19,544	19,874	7.8%
53	Real Estate and Rental and Leasing	2,017	2,212	2,614	3,082	15.2%
54	Professional, Scientific and Technical Services	4,703	4,031	5,224	5,650	6.3%
55	Management of Companies	643	531	543	501	-8.0%
56	Administrative and Support, Waste Management and Remediation Services	2,712	2,767	2,696	2,981	3.2%
61	Education Services	287	299	274	307	2.3%
62	Health Care and Social Assistance	6,691	7,005	7,534	7,680	4.7%
71	Arts, Entertainment and Recreation	764	851	801	818	2.3%
72	Accommodation and Food Services	6,007	5,438	5,294	5,193	-4.7%
81	Other Services (except Public Administration)	4,940	2,939	3,297	3,129	-14.1%
	Total	200,920	196,351	201,026	211,626	1.7%

Panel C: Employment per Unit

		1999	2000	2001	2002	Annual Growth
11	Agriculture, Forestry, Fishing and Hunting	9	11	11	9	-1.5%
21	Mining and Oil and Gas Extraction	47	41	46	52	3.5%
22	Utilities	313	281	275	306	-0.7%
23	Construction	12	11	10	11	-3.6%
31-33	Manufacturing	38	35	35	34	-3.4%
41	Wholesale Trade	25	26	27	26	2.4%
44-45	Retail Trade	26	25	27	27	1.7%
48-49	Transportations and Warehousing	72	63	70	99	11.1%
51	Information and Cultural Industries	86	73	76	75	-4.8%
52	Finance and Insurance	71	74	72	73	0.9%
53	Real Estate and Rental and Leasing	16	18	19	19	5.5%
54	Professional, Scientific and Technical Services	41	37	38	39	-1.4%
55	Management of Companies	40	38	34	42	1.3%
56	Administrative and Support, Waste Management and Remediation Services	25	28	26	27	2.9%
61	Education Services	15	15	14	15	0.5%
62	Health Care and Social Assistance	24	24	26	26	2.9%
71	Arts, Entertainment and Recreation	15	15	14	15	0.4%
72	Accommodation and Food Services	17	16	16	16	-2.5%
81	Other Services (except Public Administration)	30	19	13	13	-25.4%
Total		37	35	36	37	-0.2%

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